ITEM #:	**2**
DEPT:	**ELEC**

Staff Report

NEW THERMAL GENERATION PROJECT UPDATE

April 21, 2026

BACKGROUND:

The City's Electric utility is responsible for providing electricity to approximately 28,000 customers within a fixed electric service territory. To do so, the utility operates a Power Plant containing two natural gas-fired steam boilers to provide capacity and at times generate electricity, along with two combustion turbines that operate on fuel oil. Additionally, the utility has a Power Purchase Agreement (PPA) for wind energy and a PPA with a separate developer for solar energy.

The utility is a participant in the Midcontinent Independent System Operator (MISO) Regional Transmission Organization. MISO manages the transmission infrastructure to connect generating assets to loads and facilitates the transaction of energy on the day-ahead and real-time markets. MISO requires that a participant utility maintains enough firm electrical generating capacity to meet 109% of the peak day demand averaged over the previous five years.

It is anticipated that the City of Ames Electric utility's peak demand will continue to average higher, as more electricity is demanded for new construction, intensification of developments in the City's core, and the conversion of vehicles and appliances from fossil fuels to electricity. Current projections anticipate demand to grow 1% per year. Therefore, the Utility must continue to plan to install or purchase additional capacity.

The City and Iowa State University are reported to MISO as a single entity. The City and Iowa State's 5-year average coincident peak demand for Planning Year 2025-26 is 148.8 MW. The "coincident peak" is the peak demand of a utility at the time the MISO region is peaking. When the 9% reserve margin is included, plus accounting for losses, the City/ISU combined total peak demand is measured at 166.3 MW.

The combination of Ames and ISU's generation assets and PPAs result in 165.5 MW of generation, which is 99.5% of the required capacity. To address the 0.5% (0.8 MW) capacity shortfall that results from these measurements, Electric Services is obligated to make a payment to MISO. MISO totals up the available excess capacity on a state-by-state basis and determines the cost that must be paid by utilities that are "short" through an auction process. It is important to understand that this auction does not physically provide the City with any additional energy; it is simply a system-wide financial process to account for the available capacity and ensure that the overall MISO system remains reliable.

The auction is held for spring, fall, summer, and winter seasons. Auction prices for summer-season capacity were most recently at $666.50/MW-day. As an example, if Ames had been

obligated to cover 33 MW of summer capacity shortfall (the amount of capacity provided by Unit 7 if it was not available as a generating asset) during that most recent auction, then the Utility would have paid $1,979,505 in last summer's season alone. With shortages of capacity continuing in Iowa, auction prices are expected to increase in 2026, and for years to come.

The Utility's two primary generating assets, Unit 7 (33 MW) and Unit 8 (65 MW), are critical to meeting the City's generating capacity obligations. Both units are also advanced in age and are susceptible to increasing reliability issues. If one or both of these units were unable to operate, the Utility would need to either: 1) purchase replacement capacity through the MISO auction, 2) purchase replacement capacity from another utility using a firm PPA, or 3) construct replacement generating capacity.

With increasing electrical demand throughout MISO, there is a greater number of utilities that are short of capacity, which results in increasingly higher prices in the MISO auction. Additionally, few projects exist to obtain replacement capacity from another utility on a firm basis through a PPA. **Therefore, staff has concluded that the most viable path forward is to construct replacement generating capacity.**

This "build" path also offers two additional significant benefits not available with the other options: 1) a stable, long-term cost of energy production as opposed to more volatile pricing from the auction or a series of PPAs, and 2) greatly improved service reliability to Ames' customers during storms and other emergency conditions since the generating units will be locally controlled and operated.

In 2025, City staff and consultants evaluated the health of Unit 7 (constructed in 1967) and Unit 8 (constructed in 1982), and analyzed the alternative technologies with which to replace them and provide additional capacity to accommodate growth. **Through these studies, it was determined that the best approach would be to construct new thermal generating capacity by installing reciprocating internal combustion engines (RICE units).** These RICE units:

1. Can be procured in different standardized capacity sizes,

2. Can be configured to operate on multiple fuels,

3. Respond more quickly to start up and shutdown than boilers (minutes vs. hours),

4. Produce more energy per unit of fuel consumed compared to boilers and therefore emit less carbon than the existing boilers for the same amount of energy produced, and

5. Can be operated and maintained with fewer people and with lower maintenance costs.

NEW THERMAL GENERATION:

In October 2025, the City retained Sargent & Lundy to design the future RICE generating facility, which the City Council approved to be located in the former coal yard site southeast of the existing Power Plant. Sargent & Lundy is designing for a site that will initially host three 18-MW RICE units (54 MW total), with expansion capability in the future for an additional three 18-MW units (additional 54 MW).

The initial three-unit project's 54 MW will serve as replacement capacity for Unit 7 (33 MW) and provide additional capacity for load growth. Ultimately, the final buildout of the facility is planned to replace Unit 7 and Unit 8's combined 98 MW with 108 MW of RICE generation.

The New Thermal Generation Project originally appeared in the 2025-2030 Capital Improvements Plan (CIP) at a total cost of $84 million. Additionally, another $1.25 million is reflected in the same 5-year CIP for Coal Yard Reclamation, which would be necessary for the New Thermal Generation Project to be completed. The Coal Yard Reclamation project was increased to a total of $4,035,095 in the 2026-2031 CIP.

The $84 million figure for New Thermal Generation represented the anticipated costs for engineering, constructing a building, and installing the first three RICE units. These totals were initially prepared by HDR two years ago as a "Class 5" estimate. A Class 5 estimate is an estimate that provides -50% to +100% accuracy, meaning the true cost could range from $42 million to $168 million.

Since late 2025, when Sargent & Lundy's contract was approved, the firm has been working to complete a General Arrangement of the new facility. This includes the location of the generators, the step-up transformer, fuel infrastructure, maintenance and control room areas, office areas, emissions control systems, and other project components.

Sargent & Lundy was also asked to develop a more comprehensive and updated cost estimate by reviewing contractor information and the construction market to better understand the anticipated project costs. **On March 3, Sargent & Lundy informed City staff that the revised anticipated construction cost estimate totaled $190 million. Staff and Sargent & Lundy have since continued to refine this number +/-5%.**

COST ESTIMATE VALIDATION:

Sargent & Lundy's estimate is substantially higher compared to the planning-level estimate previously obtained from HDR. The estimate reflects Sargent & Lundy's approach to furnish a conservative estimate of the project costs, to reduce the possibility that actual costs result in an infeasible project.

However, to better understand what range of costs can be expected, staff has consulted other sources that are familiar with similar projects in our specific construction market. One of the firms staff consulted with is DGR Engineering, of Rock Rapids, Iowa. DGR is currently working with another utility in Iowa to build a similar generation plant as the one the City is preparing to build. Electric Services staff has worked with DGR on numerous projects.

In consulting with DGR, it was staff’s desire that DGR could provide an estimate with a better “local” understanding, reflecting the general labor costs seen in the Iowa area. DGR’s estimate was $161.358 million, or roughly $29 million less when compared to Sargent & Lundy's estimate.

DGR’s estimate provides staff confidence that Sargent & Lundy’s estimate is appropriately conservative and the construction market in the Iowa area seems favorable for the City when comparing to other construction markets throughout the United States with which Sargent & Lundy has experience.

Staff also reached out to a local firm, Stecker-Harmsen, Inc., for an opinion. Stecker-Harmsen provides commercial and some heavy/industrial construction cost estimating services. The firm has helped the City with independent construction estimates on numerous projects in the last several years, including the Fitch Family Indoor Aquatic Center.

Stecker-Harmsen's review was limited to evaluating Sargent & Lundy's estimate and providing feedback, rather than producing their own separate estimate. Stecker-Harmsen's overall response was that Sargent & Lundy's estimate was very thorough and generally high. **This further supports staff's opinion that the Sargent & Lundy estimate is appropriately conservative.**

DEBT SERVICE OFFSET APPROACHES:

It has long been anticipated that issuing Electric revenue bonds would be necessary to finance the construction of the New Thermal Generation project. Even during the initial concept stages of the project, staff has attempted to identify approaches that would allow the needed replacement of capacity to move forward without increasing electric rates to an unacceptable level.

A significant part of the financial strategy moving forward is the reduction in operating costs by discontinuing the combustion of refuse-derived fuel (RDF). It is anticipated that RDF combustion will cease in spring 2027, as the new Resource Recovery & Recycling Campus begins operation.

Part of the savings related to ceasing RDF combustion comes from discontinuing the payment from the Electric utility to the Resource Recovery utility for the RDF as a fuel. This amounts to approximately $900,000 annually. In addition, the end of RDF also means that RDF ash will no longer be produced and need to be conveyed and disposed of. RDF bin operating equipment and special emissions testing services will also no longer be necessary. These avoided costs total approximately $1,650,000 annually.

Annual maintenance costs related to RDF combustion are expected to be avoided beginning in 2027, such as specialized service contracts, cleaning contracts, and contracts to repair unplanned outages that result from combusting RDF. These costs total approximately $2.11 million annually, with a further $500,000 in savings from annual capital investments. Staff has also been informed by the City's property insurance broker that more underwriters would be willing to quote property insurance for the City, and at lower premiums, once RDF is no longer present in the Power Plant. Staff anticipates premium savings of up to $500,000 annually from this change.

Finally, most of the natural gas being purchased for the Electric utility is being burned in order to combust and dispose of the RDF. Once RDF is no longer being combusted, it will no longer be necessary to procure natural gas in order to operate Unit 7 or Unit 8 on a near-constant basis. Although the decrease in natural gas costs will be offset by an increase in purchased power costs to provide the electricity needed to meet Ames' demand, the reduced cost of natural gas is expected to far outweigh the cost of the grid energy, resulting in a net savings of at least $6.42 million annually. **These anticipated annual operating expense savings total $12.08 million annually.**

Under the adopted rate calculations, most of the anticipated annual savings from

discontinuing RDF combustion would be returned to customers via the Energy Cost Adjustment (ECA). The utility's ECA is a calculation which considers the variable costs to providing electricity, such as fuel and purchased power. The ECA adjusts the cost to a customer's bill on a per-kWh basis. When fuel or purchased power costs increase (or decrease), the additional costs are collected from (or credited to) customers through the ECA, without requiring the established rates to be constantly amended.

With the anticipated savings identified above, the ECA would become negative, decreasing the price per kWh of energy consumed. However, the increased debt service obligations for the new generating units will require rates to increase. Rather than refunding customers through the ECA, then increasing rates to pay the debt, staff recommends amending the ECA formula to allow the savings to be applied to debt service, mitigating the future rate increases needed.

As a secondary step to mitigate the rate increases necessary for the new generation, staff is evaluating the potential to retain Unit 7 as an operational unit for several years beyond 2027. Initially, it was anticipated that the age and condition of the unit would result in it being incapable of operation once the combustion of RDF concludes in 2027. That is still a possibility, depending on the unit's performance during the next 12 months. **However, if Unit 7 remains in operable condition at that time, it may be viable to retain it as an operating unit for several more years to count as a credit for capacity, and therefore receive capacity payments from MISO that could also be applied to debt service payments.**

In doing so, the unit could be placed "ahead of the meter," meaning the utility would establish a price per hour to operate it. The unit would only operate if the MISO market indicated market prices of energy met or exceeded that threshold. Given the costs to operate Unit 7, staff does not anticipate that it would be called to operate very frequently. The unit must simply be capable of operating to sell capacity; actual operation may be limited to only a handful of days each year.

It is likely that within a limited number of years Unit 7 will not be cost-effective to maintain. However, once the utility's new RICE units are operational, the unplanned loss of Unit 7's capacity would not have a detrimental affect on the utility's MISO capacity obligations. Staff will evaluate the costs to refurbish Unit 7 to a condition that would allow for this approach to be pursued.

FINANCING THE NEW GENERATION DEBT:

In spite of these strategies to mitigate rate increases related to the new generation, it must be emphasized that rate increases will still be required in order to fund the project. As part of the City's budget process, staff initially identified the need for 1.5% annual electric rate increases over a five-year period, beginning in FY 2026/27. These increases were intended to support financing of the New Thermal Generation Project.

At the time the 1.5% rate increases were proposed, the New Thermal Generation project cost included in the Capital Improvements Plan (CIP) was estimated at $84 million, resulting in projected annual debt service of roughly $6.7 million. As the scope and cost of the project evolved, City staff began working more closely with the City's financial advisor, Public Financial Management (PFM), with whom the City has a long-standing relationship.

Given the complexity of the project and its interaction with the MISO market, PFM recommended engaging both its local representatives and its national public power and utilities advisory team. **The objective of this effort was to develop a long-term financial plan that supports the new generation project while minimizing rate impacts to customers and maintaining the financial stability of the Electric Utility.**

Through this process, PFM developed a 30-year financial model to evaluate funding requirements and rate impacts. Consistent with standard utility financing practices, the model assumes the Electric Utility will maintain net operating income (operating revenues less operating expenses) sufficient to achieve a minimum Debt Service Coverage Ratio (DSCR) of 1.5x annual debt service. **This coverage level is a key metric used by bond investors and rating agencies to evaluate the utility's ability to meet its debt obligations from operating revenues, prior to consideration of non-operating items such as capital expenditures or transfers.**

It should be noted that as a result of the DSCR, staff expects that in almost all years of the analysis period, the Utility's undesignated fund balance will rise. **Even though the net position will continue to increase, future rate increases will continue to be necessary to maintain the DSCR, as required by the bond covenants.** However, the Utility's increased cash position will provide the Utility the necessary financial support for capital improvements, including future RICE units.

PFM's analysis included the savings described earlier in this report from the conclusion of combusting RDF, and utilizing those savings to assist with the debt service obligations. The analysis did not rely on selling Unit 7's excess capacity once the RICE units are operational.

Based on PFM's analysis, in coordination with City staff, a conservative projection indicates that, instead of the 1.5% rate increases presented to City Council during the adoption of the FY 2026/27 Budget, electric rates will need to increase by approximately 2.5% annually beginning in FY 2026/27 through FY 2043/44 (18 years), followed by 1.5% annual increases through the life of the bonds (FY 2056/57).

For context, an initial 2.5% rate increase is estimated to result in an average monthly electric bill increase of approximately $1.44 for residential customers, $15.43 for small commercial customers, and $159.27 for large commercial customers.

The rate increase approach described above is consistent with staff's objective of avoiding significant single-year rate increases and instead implementing gradual, predictable adjustments that align with expected growth in operating expenses and long-term capital needs. It is important to note that this analysis relies on conservative measures and budgeting practices, and the actual rate increases needed in a given year will depend on the ultimate project cost, debt schedule, market conditions, and other factors. Therefore, subsequent analyses in future years will be needed to make rate adjustments accordingly.

To further mitigate near-term rate impacts and better align debt service with the timing of revenue increases, PFM recommended utilizing a drawdown borrowing structure for the initial phase of the project. Under this approach, rather than issuing the full principal amount of bonds at the outset of the project, the City would utilize a $95 million line of credit, similar to a construction loan. This would allow funds to be borrowed incrementally as project costs are incurred, reducing interest expenses by limiting borrowing to only the amounts needed at a

given time and providing additional time for rate adjustments to take effect.

Upon full utilization of the line of credit, the City would execute a permanent financing through a fixed-rate Electric revenue bond issuance totaling approximately $190 million, consistent with updated project cost estimates. Assuming a 5.0% interest rate over a 30-year term, the projected annual debt service would be approximately $12.5 million. As a reminder, Electric staff projects annual savings of $12.08 million from the discontinuation of waste-to-energy operations, which is a significant factor in maintaining the projected rate increases at 2.5% annually.

RENEWABLES, CARBON FOOTPRINT, AND OTHER IMPACTS TO RATES:

The Council should note that the rate impacts in the PFM analysis described above assume: 1) the installation of the new RICE units, 2) non-renewal of the existing wind PPA, and 3) the addition of 24.9 MW of solar as described in the other report on this agenda.

The Utility has not entered into the large-scale wind and solar PPAs that are in the process of being explored. Agreeing to one, both, or neither of these agreements will have significant impacts on the portion of the portfolio that is renewable. **Separately, the utility's carbon footprint will change not only with the addition of renewables, but with the elimination of combusting RDF. This is because the new engines and MISO grid electricity are both less carbon intensive.**

The information below outlines staff's estimates of these configurations, in case the Council wishes to consider different levels of renewable energy in the City's portfolio:

Table 1.

	Renewable % in Portfolio	% Carbon Footprint Reduction from Current Portfolio
Current Portfolio (RDF, Units 7/8, GT 1/2, Forefront Solar and NextEra Wind)	11.69%	--
With RICE Units, Units 7/8, GT 1/2, and Forefront Solar, AND:		
New Solar ONLY, no Wind Renewal	8.8%	27.3% Reduction
Renewal of Wind ONLY, no New Solar	11.69%	29.6% Reduction
BOTH Renewal of Wind and New Solar	20.5%	36.3% Reduction
No New Solar, No Wind Renewal	0.4%	20.5% Reduction

The impacts to electric rates are also different depending on the combination of RICE units and renewable energy PPAs.

Table 2.

PROJECTED RATE INCREASES PER YEAR:	FY 2026/27 - FY 2027/28	FY 2028/29	FY 2029/30 - FY 2043/44	FY 2044/45 - FY 2055/56
New Solar Only, no Wind Renewal	2.5%	2.5%	2.5%	1.5%
Renewal of Wind Only, no New Solar	2.5%	5%	2.5%	1.5%
Both Renewal of Wind and New Solar	2.5%	9.3%	2.5%	1.5%

IMPACTS TO CITY'S CREDIT RATINGS:

As anticipated, a financing of this magnitude is expected to impact the City's Electric revenue bond rating. The City's most recent Electric revenue bond rating, assigned by Moody's Investors Service in 2015, was Aa2. Based on the updated borrowing level and financial profile of the utility, PFM estimates the rating would likely be adjusted to A1. **While this represents a "two-notch" change, A1-rated bonds remain solidly within the upper-medium grade investment category and are commonly associated with strong municipal utilities.** The projected change in rating is expected to result in a modest increase in borrowing costs, estimated at approximately $3 million on a present value basis over the 30-year financing period.

Finally, staff evaluated the potential impact of this financing on the City's general obligation (GO) bond rating. **Based on PFM's analysis of the City's overall financial position and key credit metrics, the issuance of Electric revenue bonds for this project is not expected to materially impact the City's GO credit profile, and Moody's Investors Service is expected to maintain the City's current GO bond rating of Aa1.**

NEXT STEPS:

The step-up transformer and RICE engines have substantial lead times to deliver. Therefore, an Invitation to Bid (ITB) for the transformer and a Request for Proposals (RFP) for the RICE engines have already been issued. It is anticipated that the proposals for the step-up transformer will be received in early May and a contract will be presented to the City Council for award in late May. **This transformer is estimated to cost $3.6 million.**

The RICE engine RFP responses are due in late May. **These three units are anticipated to cost approximately $61 million.** The responses will take considerable time to evaluate and determine the appropriate manufacturer and model. Therefore, the award of a contract for the engines is expected to occur in September 2026.

In late April or May, staff will be presenting to the City Council an action to approve the expenses for a MISO Generation Interconnection Application (GIA). The GIA is the tool used to obtain approval for connecting the new RICE engines to the transmission network. MISO performs the evaluation of a "batch" of generation proposals throughout the network, to determine the impacts to the overall transmission system's stability. **The GIA fees include a**

$7,000 non-refundable application fee and a study fee of approximately $270,000.

Once preliminary impacts to the MISO grid are better understood following the initial study, a separate deposit to MISO in the form of cash or a letter of credit is needed to perform further refinement of system impacts. This deposit is calculated at $444,000 ($8,000 per MW). However, much of this deposit is expected to be returned to the City as the study progresses, based on the assumed minimal impact of the proposed new generation on the overall MISO network.

Later this calendar year, staff anticipates bringing to the City Council a proposed modification to the Energy Cost Adjustment formula. This will be necessary to "bank" the savings created from discontinuing RDF combustion, allowing for some of the savings to return to customers and some of the savings to be put towards the future debt service. Choosing not to take this approach will require substantially higher rate increases in order to raise the funds needed to meet the utility's future debt service obligations.

Separately from the ECA, another policy issue that will require future direction from the City Council is whether to adjust service terms and rates for very large customers that may seek to locate in the City in the future (e.g., data centers, cryptocurrency miners, etc., that are not already customers). This is critical due to the minimal available capacity the utility has to serve growing demand. Although the utility offers an interruptible rate for large customers, it is a voluntary program, and a large customer could choose to continue to operate at a high demand and pay the financial penalties associated with the rate. Staff is exploring alternatives, such as an interruptible option that would allow the utility to cut off a large customer rather than relying on voluntary compliance, or adjustments to what is included in the utility's Excess Facilities Charge when connecting very large customers.

Staff will develop a plan for the extension of Unit 7's capacity life over the next 18 months as waste-to-energy draws to a close. A list of recommended capital investments to facilitate this approach will be incorporated into future CIP and operating budgets.

STAFF COMMENTS:

Although the cost estimates for the construction of the New Thermal Generation Project are higher than originally anticipated, in consultation with the City's financial advisor, PFM, it appears that the project remains financially viable with modest rate increases. The approach to construct new RICE generating capacity remains the best long-term path to provide reliable and cost-effective energy to customers.

No action is required at this time from the City Council. However, in the next few months, the City Council will be asked to take several steps to facilitate the project moving forward. These include modifying the Energy Cost Adjustment and electric rates, awarding contracts for the first major pieces of equipment (transformer and RICE units), and approving costs associated with the MISO Generator Interconnection Application (GIA).

As described in Tables 1 and 2 of this report, the Council will further need to consider how to balance the renewable portfolio and the cost to the customer through rate increases. Specific actions will be brought to the City Council in the future to make these decisions (e.g., Airport Solar lease agreement and PPA, replacement wind PPA agreement).

ATTACHMENT(S):
June 17, 2025 - Future Electric Generation.pdf
October 21, 2025 - Contract with Sargent & Lundy for Engineering RICE generating facility.pdf